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Osteopathy
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12.

ESSENTIALS OF OSTEOPATHY

NERVE CENTERS
AND LANDMARKS

BY

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PREFACE

In arranging this classification of nerve centers and landmarks for correspondence students I do not claim anything original or unique. "There is nothing new under the sun" is as applicable to these nerve centers and their locations as to anything else under the sun, and yet, with one exception (that most excellent and most completely arranged work of Charles Hazzard known as Principles of Osteopathy), there is no satisfactory arrangement made of these centers and landmarks by which the student may know where to look for the origin or termination of a nerve, or where to treat for effect upon the sympathetic system, etc. And because I have so many questions upon this point and along this line I have made this crude little arrangement and hope it will be received in the spirit in which it is written—not as an attempt at authorship, but merely as a convenient aid to the study of Osteopathy.

I have not attempted to give treatment in this little work. The references I have made to it are merely incidental. Inasmuch as anatomy, physiology and all of the subjects referred to are not original with any author I have quoted largely from others,

especially Hazzard, and have done them the honor of naming them with every quotation in order that they may receive all credit due them for their research and knowledge. If I have been able to arrange the nerve centers and landmarks in such a way as to be helpful to the student of Osteopathy I am content.

ISABEL MONTGOMERY-DAVENPORT.
Chicago, Ill., July 1st, 1903.

ESSENTIALS OF OSTEOPATHY

LECTURE NO. I.

THE OSTEOPATHIC THEORY.

Assuming that the student has become thoroughly acquainted with the anatomy of the human body, as must be the case if he desires to be a thorough osteopath, I shall not go into detail, but give in the most simple and plainest manner possible the subject matter of this lesson.

To make it plain let us consider the central nervous system, or the brain and spinal cord, as the dynamo which generates the power, whatever it may be, that runs this most wonderful of all machines, the human body. Now this dynamo is made up of cells which for a simile you may liken to the cells of the honeycomb filled with honey. Between these tiny cells is the stroma or honeycomb made up of fibrous tissue which surrounds the cell and then forks off into long strings or fibers. The nerve force is generated in the honey or protoplasm contained in these cells and is carried out to the muscles, skin and internal organs, etc., by the prolongations or strings of honeycomb. In fact, the nerve fibers. Running along with these nerve fibers are arteries

and veins, and to reinforce the dynamo, at some distance, are small batteries or stations known as ganglion. Now, as you already know, there are two systems of nerves, known as the spinal and the sympathetic. Each has its origin in the brain and is reinforced and aided by the spinal cord and nervous ganglion. The brain and spinal cord are encased in heavy boxes of bone for protection. These boxes (the skull and spinal column) are made up of many small blocks of bone joined together by ligaments and give attachment for many muscles, all of which aid in keeping them in place if in their normal condition, and in displacing them if not in normal condition, but of this I shall speak later. The nerves from the brain make their exit through small openings or foramina upon the face and in the neck. Those from the spinal cord emerge through the foramina between the vertebræ or small blocks of bone which make up the spinal column, and are distributed to the muscles and skin. The sympathetic nervous system has its origin in the brain and forms two chains which are reinforced at frequent intervals by ganglia, giving the appearance of numerous strings connected at certain distances by a large bead. These chains pass down on the inside of the spinal column and are finally connected by the ganglion impar in front of the coccyx or terminal bone of the spinal column. Now, during the whole course of these two chains or systems of nerves, i. e., cerebro-spinal and sympathetic, they are connected by communicating fibers known as Rami communicantes, Rami efferentes and associate fibers, as the case may be. So in reality it is one whole nerve system, and what affects one, no matter how remote, will in time affect the other.

The nerve fibers of the sympathetic system supply or carry nerve force to the internal organs, the involuntary muscles (or those which act without our volition or knowledge), to the walls of the blood vessels, the brain and the secretory cells of the glands.

Now the osteopathic theory is that so long as this power which runs the machine is uninterrupted and allowed to go on in its normal course the machine will run until worn out, which, according to the Bible, is three score years and ten. Disease is an accident due to some obstruction to the normal flow or course of the vital fluids, namely, nerve force, circulation of the blood, lymph, chyle, bile and all secretions or excretions of the body.

This obstruction may be due to slight or great displacements of the bones. It may be a slight slipping to one side or to the front or back, or upward or downward of the bones at their articulations or joints. For instance, the vertebral column is made up, as I have told you, of small blocks of bone piled one upon the other. The nerves and blood vessels emerge from small openings between these vertebræ. Now suppose the muscles which are attached to these little blocks of bones, or the muscle which is attached to one side of one, contracts, either from external stimulation, such as a blow, or from cold, is it not reasonable to suppose that this contracted muscle may pull that little block of bone over until it encroaches upon the nerves and blood vessels which emerge from beneath it? Or suppose the ligaments attaching this little block of bone to its neighbor or to the rib which adjoins it becomes relaxed, cannot you see how easy it would be for the rib, let us say, to drop down into the notch and impinge the nerve or blood supply? Or let us

suppose what is even more common—a simple contraction of the muscles about the blood and nerve supply to a part, when we think of the power of one small muscle we can readily conceive how they may contract down upon the tender nerves and blood vessels and impede, if not entirely obstruct, circulation. Or again take an area where the blood vessels have been injured. In this case the little plates which form the walls of the vessel separate and the serum or watery constituents of the blood seep through into surrounding tissue (i. e., inflammatory exudate) and often forms a hard fibrous mass which by pressure interferes with circulation. When you sum it up, a true definition of perfect health is a perfect circulation of the vital fluids. True, many diseases are due to germs or to absorption of poisonous gases, but if one lives much in the open air and thus keeps a good quality of blood, and this life-giving fluid is freely circulated to all the tissues these will be so well fortified they can and do resist any and all germs or other poisons with which they naturally come in contact and no harm is done. But having these germs always with us, as it were, then given a stagnate circulation which allows the vitiated and poisonous venous blood to remain too long in a part, you have tissues which are poorly nourished and too weak to resist, and so these poisonous gases and deadly germs are allowed to enter the system and the result is disease; and if you cannot remove the obstruction, thus establishing a normal circulation (not of blood alone, remember, but of nerve force and all vital fluids) then death all too soon perhaps.

And so, according to the osteopathic theory, the osteopathic practitioner should be the machinist who

easily and readily recognizes and corrects the cause of obstruction to normal circulation and in so doing he naturally goes first (as near as possible) to the origin of the nerve supply, the spine, for a cause and for this reason the spine will be your first point for examination of the case before you, and I shall next give you the usual manner of examining a patient for osteopathic diagnosis and treatment.

LECTURE NO. II.

EXAMINATION OF PATIENT.

When a patient presents himself to you for treatment always make a thorough examination before attempting a diagnosis which, of course, must be made before you can treat intelligently. Listen attentively to the patient's "tale of woe," for besides being a consolation to him it may aid you some, though you must strictly avoid making a diagnosis from symptoms and look for lesions. However, it is a good plan to talk with the patient, making him or her feel less restrained and thus helping them to relax and feel easy under your treatment. Then, too, you may learn something of the natural physical tendencies as well as the habits of the patient, and hence will know how to advise them as to care, diet, dressing, bathing, etc. You may also learn, perhaps, whether any deformity you may find is congenital or acquired.

I keep a number of suits of pajamas (jackets and trousers) made of washable material, loose and adjustable to almost any sized person, in my office, and after talking with the patient for a few minutes I have them shown to the operating room and told to remove all their clothing except the underwear and to don one of the pajama suits, giving them instructions to touch the bell when ready for treatment. In my operating room I have a table six feet in length, two feet high and two feet wide. The frame and legs are of oak strongly put together and the top is stuffed with excelsior, covered with hair

and upholstered in leather. On this I place a small pillow with a clean towel over it for each patient, and if the room is at all cool a light robe or blanket. Then when your patient is ready have him lie at full length upon the table on his side, and beginning with the neck make a thorough examination all the way down the spine for abnormal variations in the spinal column—as to position of the vertebræ one to another; for hard, contracted muscles, both superficial and deep, which will feel hard and cordy under your fingers; for sore or tender spots, and for variations in the normal curves of the spine. Also note the position of the heads of the ribs. After going down one side carefully have the patient turn over and examine the opposite side in the same way; then have the patient sit up on the side of the table or on a stool and examine the curves of the spine. See whether the neck is straight and after placing him on his feet look to his hips and shoulders—whether they are even or one is higher or lower than the other. I also, in treating, notice these things when the patient is lying at full length in the dorsal position. Note also the complexion and the eyes—whether pupils are dilated, contracted or even, whether the eye is abnormal in any way. Note the face—whether the lines are symmetrical or not, whether the expression is one of distress or is pleasant, happy and placid, intelligent or vacant, etc. When examination is completed have the patient resume the prone position upon his side on the table for treatment. Before going into treatment, which is not my purpose here, we will become familiar with the location of the spinal and sympathetic nerve centers, as we call them.

LECTURE NO. III.

ORIGIN OF THE SPINAL NERVES ACCORDING TO THE ANATOMIST (HOLDEN) AS QUOTED BY HAZZARD.

The origin of the eighth cervical nerves corresponds to the interval between the sixth cervical spine.

The origin of the first dorsal nerves corresponds to the interval between the fourth and eleventh dorsal spines.

The origin of the five sacral nerves corresponds to the last dorsal and first lumbar spines.

Landmarks along the spine. Holden instances a median furrow caused by the prominence of the erectors spinæ which extends along the spine as far as the interval between the fifth lumbar vertebra and the sacrum. Hollows upon the surface correspond generally to prominences of the skeleton and vice versa. This is on account of the attachments by tendons to prominent skeletal points. Hazzard says sharp friction will redden the spines of the vertebræ so that they can be counted and one can notice whether they are in place or not.

The level of the third dorsal spine is the level of the root of the spine.

The level of the seventh dorsal spine corresponds to the inferior angle of the scapula.

The level of the twelfth dorsal spine corresponds to the head of the last rib.

The level of the third intercostal space corresponds with the root of the spine of the scapula.

The level of the third dorsal spine corresponds with the third intercostal space.

The level of the third intercostal space corresponds with the level of the right and left bronchi, the right being near the posterior chest wall.

The following is a convenient method for ascertaining the position of the twelfth dorsal spine: Have patient fold his arms and lean forward, thus bringing the spines of the vertebræ out prominently, then the lower border of the trapezius muscle can be traced to the twelfth dorsal spine.

The kidney is best reached by pressure below the level of the last rib at the outer edge of the erector spine.

The tip of the crest of the ilium is about the level of the spine of the fourth lumbar vertebra.

The ilio-costal space extends from the lower border of the twelfth rib to the crest of the ilium, varying in width from the breadth of the finger to that of the hand.

In the depression below the occiput are found the edge of the trapezius muscle and the upper end of the ligamentum nuchæ.

The second cervical spine is forked and rather prominent. The third, fourth and fifth cervical spines are not usually made out, as they recede anteriorly from the surface. The sixth and seventh (prominens) are prominent.

The spines of the dorsal vertebræ correspond with the heads of the ribs next below, e. g. the fourth dorsal spine with the head of the fifth rib. But the eleventh and twelfth dorsal spines correspond with the head of those ribs. The following landmarks from Holden may also be useful before going further in the examination of the body.

LANDMARKS.

Opposite seventh cervical spine, apex of angle of bifurcation of trachea.

Opposite fourth dorsal spine, aortic arch ends; upper level of heart.

Opposite eighth dorsal spine, lower level of heart; central tendon of diaphragm.

Opposite ninth dorsal spine, œsophagus and vena cava perforate diaphragm.

Opposite tenth dorsal spine, lower edge of lung; liver comes to the surface posteriorly; cardiac orifice of stomach.

Opposite eleventh dorsal spine, lower edge of spleen; suprarenal capsule.

Opposite twelfth dorsal spine, lowest part of pleura; aorta perforates diaphragm pylorus.

Opposite first lumbar spine, renal artery; pelvis of kidney.

Opposite second lumbar spine, termination of spinal cord; pancreas; duodenum just below; receptaculum chyli.

Opposite third lumbar spine, umbilicus; lower border of kidneys.

Opposite fourth lumbar spine, division of aorta; highest part of ilium.

Angle of bifurcation of trachea is in some cases opposite the fourth dorsal spine. This angle corresponds in front with the junction of the first and second parts of the sternum. * * *

LECTURE IV.

PECULIAR VERTEBRÆ.

The peculiar vertebræ are the second, sixth and seventh cervical, the twelfth dorsal and the fifth lumbar.

The second cervical vertebra is somewhat prominent and is bifid. The sixth and seventh cervical become more prominent than any others in that region, especially the seventh, which is called the vertebra prominens by Gray.

The twelfth dorsal spinous process is flatter and makes a gap or break between the eleventh dorsal and the first lumbar which can be readily felt by the examining hand and may be taken for one of those abnormal so-called breaks in the spine from a normal separation in the vertebræ. There is also a break between the spine of the fifth lumbar and the crest of the sacrum.

The transverse processes of the atlas can be easily distinguished between the mastoid process and the angle of the inferior maxillary bone. They should be located midway between these points. Sometimes you will find the transverse processes of this vertebra too far forward and making pressure on the carotid artery, causing headache and eye troubles. You may also find one process too far forward and the other too far back, which shows the vertebra is twisted.

The ligamentum nuchæ, which is attached to the occipital protuberance and to the spinous processes of all the cervical vertebræ to the seventh, sometimes becomes tense and contracted, causing headache and

discomfort at the back of the neck. These symptoms are often relieved by a thorough stretching of this ligament.

By turning the head to one side you may bring into prominence the articular processes of the vertebræ in the neck, and then tell whether they are in line or in normal position. If you find sore spots along the spine they denote either a slipping of the vertebræ or contracted tendons or muscles which make pressure upon the spinal nerves at their exit.

The ligaments and tissues covering the spine may thicken and fill in the normal curves, causing what Hazzard calls a "smooth spinal column" in distinction from the condition known as spinal curvature.

LECTURE V.

CENTERS OF THE SYMPATHETIC, FROM HAZARD.

Third cervical vertebra, middle of neck. Above, manipulate upward; below, manipulate downward.

Third, fourth and fifth cervical, origin of the phrenic-hiccoughs.

Third, fourth, fifth and sixth vasomotors. The superior cervical ganglion is connected with the first four cervical nerves lying opposite the second and third cervical vertebræ. The middle cervical ganglion is connected with the fifth and sixth cervical nerves lying opposite the sixth and seventh cervical vertebræ.

The point between the first and second dorsal vertebræ, the center for the lungs.

First rib for the heart.

Between second and third dorsal, ciliary center and recti of eyeball.

Between fourth and fifth dorsal on the right side for the stomach center, on the left, pneumogastric for the pyloric orifice.

Fifth and sixth dorsal, vasomotors to the arm.

Fifth, sixth, seventh and eighth dorsal, great splanchnics.

Eighth dorsal center for chills.

Ninth, tenth and eleventh dorsal, small splanchnics.

Twelfth dorsal, smallest splanchnic.

From a point between the seventh cervical and the first dorsal to a point between the eighth and ninth

dorsal branches to pulmonary plexus. The posterior pulmonary plexus connects with the second, third and fourth ganglia of the sympathetic. The anterior pulmonary plexus is from the pneumogastric and sympathetics. "Vasomotors to the lungs have been found in the dog from the second to the seventh dorsal. This corresponds to the centers upon which we work in man to reach the lungs."

Second lumbar vertebra center for parturition, micturition, defecation.

Third lumbar coeliac axis, point between fourth and fifth lumbar vertebra, defecation.

Fifth lumbar, center for hypogastric plexus.

From a point between the second and third sacral to the point between the fourth and fifth sacral, center for the neck of the bladder.

Fourth sacral, center to relax vagina.

Fourth sacral sphincter ani (the latter two are spinal branches).

"The term 'cervical brain' has been applied by Dr. Still to the region lying between the first cervical vertebra and the fourth dorsal vertebra; the term 'abdominal brain' has been applied by him to the region lying between the first dorsal and the third lumbar vertebra; 'pelvic brain,' to that region lying between the tenth dorsal and fifth lumbar vertebra."

Other centers of the sympathetic are as follows:

Sensation, atlas to the fourth dorsal; nutrition, sixth dorsal to coccyx. These centers are spoken of by Dr. Still.

Centers in the medulla as follows:

Cough, sneeze, vomit, respiration, salivation, phonation, and deglutition venal center, center for spasms.

Vasomotor centers; medulla, second to sixth dorsal, fifth lumbar.

Cilio-spinal center, fourth cervical to the second or fourth dorsal.

Heart center, in the corpora striata first rib; first, second, third, fourth and fifth dorsal vertebra.

Crevix uteri, ninth dorsal.

Blood supply to ovaries, eleventh dorsal.

Uterus, second lumbar, second and third sacral vertebrae, also hypogastric plexus by the lower dorsal and fourth upper lumbar nerves and through the splanchnics.

"Vasomotors of the head: The eye, ear, salivary glands, tongue, brain, etc., are all reached at the superior cervical ganglion. Here also a general vasomotor effect to the body is claimed."

Vasoconstrictors for the head are said to exist at the fifth and sixth dorsal vertebra. Stimulation of the superior cervical ganglion has a vasoconstrictor effect upon the vessels of the retina, probably through its ascending branch and its connection with the fifth nerve.

The lungs, second to seventh dorsal vertebra.

Small intestine, above first lumbar.

Large intestine, first to fourth lumbar.

Liver, the splanchnics, vagi, and inferior cervical ganglion.

Kidneys, the sixth dorsal, second lumbar, renal splanchnics and superior cervical ganglion.

Spleen, splanchnics on the left side, eighth to twelfth dorsal.

Lower limbs, second dorsal down.

Circulation, superficial fascia (the second dorsal for the upper part of the body, the fifth lumbar for the lower part).

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Valves of the heart, second to fourth dorsal.

Rhythm of the heart, third and fourth cervical.

The genito-spinal center and lower hypogastric plexus and plexus to the intestinal canal, bladder and vasa deferentia at the fourth and fifth lumbar.

Bowels (peristalsis) ninth, tenth and especially the eleventh dorsal.

Larynx first, second and third cervical.

LECTURE VI.

EXAMINATION OF THE SPINE.

The Osteopath works from several standpoints, first with a view to reducing any dislocations of bone or of the organs which may exist; second, to relax muscles; third, to relax or replace tendons; fourth, to stimulate or desensitize nerve, as the case may be.

The physiologists tell us that nerves may be stimulated by mechanical irritation and that a sedative effect may be obtained by pressure or inhibition, and by a system of experiments and close observation the Osteopaths have found that by stimulating or desensitizing the spinal nerves in certain locations they get an unfailing result through the sympathetic nerves upon the parts which they supply; hence these osteopathic sympathetic nerve centers are of the utmost importance to the student of Osteopathy. I give them entire according to Hazzard.

As I have told you, the principal point for osteopathic examination is the spine because it with the brain is the central nervous system. All nerve force emanates from here. If you cut off the nerve supply you have a dead or useless part; if you cut off or stop the entire nerve force of the body you have death of the body. It means life. And so if, for example, a patient gives symptoms of stomach trouble you look for any pressure on or interference with the sympathetics at the fourth and fifth dorsal, and you will find tenderness, if not soreness, in this locality, upon pressure; also, as a rule, over the pneumogastric in the neck. The interference here with

nerve and blood supply to the stomach causes an imperfect action there. Digestion is not carried on to completion because there is not a sufficient amount of blood brought to the part to supply the necessary amount of gastric juice. The nerve force, also, is lessened, both to the walls of the stomach and to the walls of the blood vessels. Because of this incomplete digestion there is fermentation and formation of gases, which distend and inflame the stomach, causing irritation to and pressure upon the end nerves; and this irritation or soreness is carried back to the center or origin, and is transmitted by the sensory branch of the spinal nerves to the tissues and muscles about this center and they with the nerves themselves become irritable or sore. This is illustrated in paralysis. You will always find the nerves and muscles very sore and painful to pressure in a paralyzed limb, and if you follow the nerves which supply that paralyzed member back to their exit from the spine you will find a very sore point there. Of course you must determine the cause and treat to remove it. It may be due to a slight slipping of the vertebræ, it may be due to a displaced rib, it may be due to a slipped or contracted tendon, it may come from pressure of exudate and local congestion, or it may arise from a contracted condition of the entire muscular system, especially of the deep muscles—"the multifiduous spinæ." In many cases you will not be able to distinguish a marked lesion. In that case treat to relax muscles, to stimulate nerves and to increase circulation.

On the other hand you may have an irritable condition of the nerves themselves—the brakes, as it were, are off. The stimulation in the cells of the brain or spinal cord is too great or there is noth-

ing to check the flow of this energy to the end of the nerves, which, for example, again let us say, is the stomach and bowels, as in cerebro-spinal meningitis or cholera infantum. The nerves are running away. They are wild and over-excited. Here the Osteopath shines by making mechanical pressure or inhibition over the sympathetic nerve centers for the stomach and bowels. He checks this flow of nervous energy, gives the end nerves a chance to settle down and become sedative, and the demonstration, i. e., vomiting and diarrhoea, ceases. In this case you are apt to have a too relaxed muscular and tendinous system and your patient needs a course of general treatments, with cautious and proper diet to tone up these flabby tissues and make them hold the structures, to which they are attached and with which they are surrounded, in their proper places, to give normal strength and tone to the blood vessels and to treat the irritable nerves in a pacific or sedative manner. All this after the acute symptoms have abated. Hazzard gives the following points from Quain, and other authorities. I venture to quote them here because what he says in regard to the phrenic nerve is true of much of the nervous system and is an example of the theory upon which the Osteopath works:

He says the phrenic nerve arises from the third, fourth and fifth cervical nerves, especially the fourth, having branches from the third and a recurrent branch from the fifth. It is reached in different ways, being impinged against the transverse processes of the vertebræ, or being reached at the fonticulus gutturi, or behind the first rib and the clavicle. It is important to us mainly as a means of stopping hiccoughs.

Gray says that the phrenic supplies the pericardium and the pleura by filaments; that in the thoracic cavity a filament is sent from the sympathetic to join the phrenic nerve, and that there are also branches to the peritoneum.

From the right nerve there are branches to the phrenic ganglion, which is situated just below the diaphragm, the terminals perforating the diaphragm to reach the phrenic or diaphragmatic ganglion of the sympathetic. This ganglion of the sympathetic is connected with the solar plexus. This ganglion sends branches to the hepatic plexus and also some filaments to the inferior vena cava. Its function as a spinal nerve is to supply the muscle of the diaphragm.

From the left nerve branches go to join the solar plexus, but there is no ganglion formed.

Quaine, as quoted by Hazzard, substantiated these points and says further that branches reach the phrenic in the neck, going to the pericardium, and that from the right nerve are branches going to the inferior vena cava both above and below the diaphragm, and that branches also go to the right auricle of the heart. Pausini, according to Quain, has found in animals that the phrenic plexus of the diaphragm is participated in by the lower three intercostal nerves. You will see that the purpose is to associate the muscles of respiration, the abdominals, intercostals and the diaphragm itself. Quain states further that the phrenic may have a branch from the hypoglossal nerve and from the fifth cervical nerve. Such are the facts in relation to the phrenic and its distributions. Hazzard says when we examine those facts in the light of Osteopathy it seems certain that we find the phrenic significant to us in more ways

than one, you see that the phrenic is connected with the sympathetics: first with the middle or lower sympathetics in the neck; next that it receives a filament from the sympathetic in the chest; next that it perforates the diaphragm to join the nerves of visceral life, those on the right running from the diaphragmatic ganglion, those on the left joining without the intervention of a ganglion. You notice further that it has a connection with a cranial nerve—the hypoglossal; that it has branches connected with the brachial plexus, that is, from the fifth cervical; and that it may perhaps join with the lower three intercostals, but I do not know that—that has never been shown to be true in man. The conclusion is obvious from what we know of the connection of nerves in different parts of the body, both sympathetic and otherwise, that if any of these sympathetic spinal or cerebral nerves were diseased the disease might conceivably be extended to the phrenic and affect it, and that we might have phrenic symptoms arising from these other troubles. The reverse, of course, is true and that any of these structures which are supplied by the sympathics or these other nerves may reflexly be affected by the phrenic nerve when diseased. You have seen that it supplies the pericardium, pleura and peritoneum, and it supplies one of the great blood vessels, the inferior vena cava, and sends branches to the right auricle of the heart, and there is no reason, according to our theory, why disease in any of these situations might not affect the phrenic nerve, and you might have symptoms of disease in the phrenic nerve. So that our theoretical rule is certainly a good one, for it works both ways, either in affecting the phrenic nerve or the other structures, as the case may be.

The importance of this to us lies in the fact that it would be an adjuvant in the treatment already used. It is one more path by which we can influence nerve force. We have certain ways of reaching the abdominal viscera through the splanchnics in the back. We might have a case that we could not affect in that region, but if we could reach the trouble through the phrenic we could accomplish the desired result.

So in our work upon abdominal viscera may we avail ourselves of the advantage of work in the neck on the phrenic.

Hazzard quotes Dana as saying there is a motor area in the neck which is readily affected by the electric current and he treats here for diaphragmatic palsy. Hazzard thinks this corresponds to the work done by the Osteopath when he makes pressure directly on the phrenic nerve.

Hazzard quotes from Dr. Jacobson along this line as follows: "Another reason for the phrenic nerves traversing the diaphragm and breaking up into branches on its under surface may be to enable them to come into communication with the sympathetic or visceral nerves of the abdomen. From this communication branches are given to the hepatic and solar plexuses, and the inferior vena cava. Every one knows the value of active exercise when certain abdominal viscera are torpid in the performance of their functions, e. g., in constipation, biliousness, etc. Hence we see that we can go farther and say that since the brain and cord are thus brought into connection through the phrenic with the sympathetics and with abdominal sympathetic life, and since the brain must send certain impulses along those nerves and thus affect the abdominal sympathetic

nerve life, there is no reason why the reverse may not be true. Why may we not affect the brain and cord by working back from the sympathetics and more particularly when there is a lesion, because manipulation must tend toward the normal? You would manipulate the phrenics, the abnormalities would be affected, you would affect the phrenic, and thus be more likely to affect other nerves which have under control that which has become abnormal. There is no reason, according to our theory, why we would not tone up the whole mechanism of respiration, especially the muscular respiration, since it is in connection with the phrenic nerve and with the abdominal sympathetic."

LECTURE VII.

NATURE'S AID IN TREATMENT.

Hence you will see and understand how it is that the Osteopath is able to affect the inner life or the internal organs by manipulating the body externally, and yet the point is made one for much ridicule by physicians who have condemned Osteopathy as perfectly foolish because they either did not understand the theory upon which the Osteopath works or they did not thoroughly know their Anatomy and Physiology.

Remember that the tendency of Nature is to the normal or natural, and if given a little help she will readjust things to their normal course; and so in your work you will always have the assistance of Mother Nature if you do not work against her, and for this reason it is possible often to correct lesions and remove obstructions by stimulating the blood supply or by increasing the flow of blood through the body. By throwing open the vaso-motors and flushing the capillaries you increase elimination. The blood makes its circuit through the lungs more often and is purified, and the muscles and all tissues become strengthened and adjust themselves to their normal positions and conditions. The old theory of keeping an injured part quiet is fast becoming nil. It was one of the hardest things for me to get away from, but after I had seen and experienced the perfect rationalism of keeping the blood moving and not allowing venous congestion to take place or to remain I no longer hesitated to begin gently manipu-

lating the sorest part (even to a bad sprain of my own ankle) at once, and by stimulating the surrounding vessels to aid them in carrying away the products of injury and inflammation, thus relieving pain and pressure, and to bring new blood to the injured vessels and tissues, and thus to rebuild and strengthen them on to resolution and complete health in a much shorter period of time than by the old method of bandages, casts and "perfect quiet." You will have some difficulty in inducing patients to walk on a sore limb or use a sick part when it is painful to do so, and there is a limit even to this method, for you must remember that you have an injured and weakened lot of vessels in the sick part and they will not be able to empty themselves of blood brought to them as readily as if they were normal, hence by over-treating or over-stimulating circulation you may keep too much blood moving in a given part and produce inflammation. As an example, I had a patient who was suffering from synovitis of the knee joint due to an injury. Her physician, a regular of high standing and of broad mind, referred her to me for treatment. I visited her at her home because she was confined to her bed. The knee and whole limb was badly swollen and excruciatingly painful. I began by treating the back from the lower dorsal on down to the foot, treating both sides and gradually worked around to the sore knee. The patient was so much relieved by the first treatment that, against my advice she insisted upon a treatment every day, and after the fourth day the limb was so much inflamed I was compelled to desist and allow the part to rest, when I resumed treatment, giving three a week and allowing the vessels to gradually empty and refill in the interim. Under this pro-

cedure my patient was able to come to my office, although only by aid of crutches. However, in two months' time she was able to appear upon the stage as the leading contralto in a concert, but if I had not understood the theory upon which I worked I could have done the patient, myself and Osteopathy irreparable damage. Don't for the sake of a double fee treat patients too often. It will not pay in the end. Of course, if you have a pale, poorly nourished, anæmic patient who is warmed and improved by daily treatments give them by all means. What I wish to impress upon you is that Osteopathy cannot be taken ad libitum or with irregularity any more than any other therapeutic measure. Dose your patients as they need it and as best suits their case. Don't be an egotist or faddist. Remember that while Osteopathy is an excellent and most successful method of curing disease and ailments there are many things which aid and assist it. No treatment will prove satisfactory if the patient is constantly making errors in his daily living, and so when you take a case in hand look well to his diet. For instance, if a patient suffers from indigestion and a congested liver the case will not yield to treatment if he keeps up the trouble by drinking coffee and eating large quantities of starch food. Without going into the subject fully here your Physiology will teach you the foods which are cared for by the stomach and intestines, and also the changes which take place in the liver. Neither will your patient be benefited by the increased circulation which your treatment will make possible if he is shut up in an atmosphere of poisoned and vitiated air. Or, again, if he does not bathe and keep the skin free from the accumulations of elimination. Again, there are many

aids to your treatment in outward applications, such as hot fomentations, antiphlogistine, cold applications, the ice coil, etc.; and again in internal administrations, as flushings of water or simple oils, as the case may be. And in this connection I wish each of my students could have Dr. Kellogg's new book on Hydrotherapy. It is complete with valuable instruction on this subject, but it may be well to give you a few general rules here:

First, remember that heat relaxes the muscular coats of the blood vessels and takes off the tension, which gives an increased or easier flow of blood through a part or the whole body, as the case may be. Hence, if you have stasis or congestion, you apply moist heat to keep the blood moving freely through the part. On the other hand cold contracts the blood vessels and if there is hyperæmia, i. e., too much arterial blood moving through a part, you have heat, pain and swelling, and the cold application is suggested first because it lessens the amount of blood and, second, because where there is hyperæmia or inflammation you are very apt to have pus, for this condition favors the work of the pus microbes and cold retards if it does not entirely stop their work. And so, while your Osteopathy and your hot or cold applications do not destroy germs, they make the tissues normal and resistive to germs and their poisonous products, and with the tendency to the normal which Nature takes resolution goes on to perfect health. These are general rules, of course, and must be applied according to the condition of and the effect upon a given case. The hot or cold enema—usually hot—is another fine adjunct to treatment. I am a great believer in flushing the orifices of the

body freely with pure water. Drink it copiously, thus flushing the alimentary tract and the kidneys. The vaginal douche has been much overdone and yet it is a comforting, cleanly measure, but should never be absolutely cold, neither extremely hot, simply comfortably warm—such heat as one can hold the hand in without wincing is a good guide in the absence of a thermometer, when 100-110° F. is about correct.

LECTURE VIII.

VARIATIONS FROM THE NORMAL CURVES OF THE SPINE.

In examining the spine you will often find an increase or accentuation in the natural curves of the spine. Sometimes this means simply an unusual thickening of the spinous processes or of the tissues covering them, but more often they are due to an actual change in the curves of the spine. As a general rule the center in the location of the lesion is affected, either the cerebro-spinal or sympathetic, or both. If only the superficial muscles are at fault the cerebro-spinal system only may be affected, but, of course, this may later be transmitted through the sympathetics to an internal organ. On the other hand, if the lesion is deep, the sympathetics will be affected and the parts which they supply. You may find a flattening between the shoulders or an increased curve, and the centers for the stomach are affected to the eighth dorsal; or you may get an increase in the curve in the lumbar region, when the bowels and pelvic organs will suffer, etc. This is not the actual spinal curvature, which I shall take up later, but merely a deviation from the normal curve, but enough to cause considerable trouble.

The coccyx is often displaced because of the fact that it is the end bone of the spine and movable. The most common abnormal position of this bone is an extreme anterior displacement which encroaches upon the rectum and is a common cause of constipation, hemorrhoids and uterine congestion,

to say nothing of the reflex troubles which it is possible to cause. Again, the coccyx may be deflected to one side or the other, and here the sciatic nerves may be affected through connecting branches, or directly or by interference with the sympathetic centers. The uterus and nutrition are involved, as well as the blood supply to the bowels and pelvis. I have had two cases where the coccyx was completely displaced in a backward position and was extremely painful because constantly irritated and injured by pressure from the patient's clothing and movements, making it painful for the patient to lean back against a chair or anything hard. One of these cases I was able to correct because recent, but the chronic case was only relieved by treatment and by wearing a small soft rubber ring applied by adhesive plaster straps about the coccyx for protection.

In the neck the atlas may impinge upon nerves affecting the superior cervical ganglion and by its connection with the fifth nerve, the retina of the eye. Again, the atlas may be displaced in such a manner as to act upon the cord or as to shut off circulation to the brain, causing paralysis, insanity, hysteria, etc. In fact, any abnormality of the structures in the neck is probably most serious. The position of the **first and second ribs** is of great importance, also, to the Osteopath, because by pressure of the first rib or structures about it there is interference with the cardiac ganglion and the heart is affected thereby. If the second rib is involved we have difficulty in breathing, and pressure from this rib is the most common cause of asthma. But more of this when I take up examination of the thorax.

LECTURE IX.

RIGID SPINE.

It sometimes happens that the back is found to be very stiff and rigid, either in one locality or the whole length of the spine. This condition is due to a constant contraction of the multifidus spinæ, interspinales and intertransversalis which are the small muscles attaching one vertebra to another, etc. These contractions bring the vertebræ so close together that motion between them is inhibited and is one cause of the little clicking or cracking sounds which you will often get in examining a patient, and is due to the snapping or grating of the tendons or the moving of surfaces one upon the other, rather than to dislocations, which the new operator will be led to take them for unless he keeps this fact in mind. Of course these noises may be due to displacements, but you must know how to diagnose between them. Rigidity is most common in the neck, probably because of exposure to cold draughts. However, I find it often the case that patients say, "Why, doctor, I did not realize until since taking treatment that I have not been turning my neck, but if I wished to look around I turned my whole body."

The lumbar region is the next which is most commonly rigid, but often it is the whole spine, and you will be able to feel the deeper layers of muscles hard and cordy through the superficial ones under your fingers upon deep pressure. The treatment is a thorough kneading of the whole muscular system,

with attention to the vaso-constrictor centers, relaxing them and relieving the congestion in the muscles, and after relaxation is established then movements. The danger of this condition is serious, because the pressure and friction of one vertebra upon another may set up an inflammatory condition which can be carried to the meninges or membranes covering the spinal cord, to say nothing of the impingement of nerves and blood vessels, and the least dangerous but nevertheless painful condition of the sore muscles of the back and neck.

Spinal Relaxation.—On the other hand you may have an abnormal relaxation of the spine due to flabby tendons and muscles, and this is not necessarily the case in an anæmic patient, but is often found in an apparently fairly well nourished and full-blooded person in whom the blood supply to this one part is insufficient. In this case you will find a stoop or if the patient is straight it is through great effort. On examination you may find separation of the vertebræ, one or several, with great sensitiveness at the point of separation—not soreness, but light pressure causes the patient to jump and show irritability. The whole skin is very sensitive in these patients also, probably because the cord is less protected at these points.

LECTURE X.

SPINAL CURVATURE.

This condition is commonly found, especially in children; the lateral curvature more often than any other and the posterior next, but the anterior is most difficult to treat when present. In true spinal curvature there is generally a compensatory curve. These little blocks of bone piled one upon the other begin to topple because the attachments on one side are contracted, while those of the other are either normal or too relaxed. At least one side pulls harder than the other and to offset this another set of muscles on the opposite side and lower down or higher up begin to contract, and so the vertebræ are pulled and pushed out of line there. If I find curvature of long standing in an adult I never expect to fully correct it, but in children it yields readily to treatment, and some of the most brilliant and gratifying results I have had were in this class of cases. My experience shows me that it is a mistake to put braces on a patient with view to correcting and displacement or deformity, inasmuch as the pressure made upon the muscles causes them to atrophy and become flabby, thus making them too weak to hold the parts in place when the brace is removed, and so I give a thorough muscular treatment followed by an adjustment of the bony parts every other day and the results are very satisfactory, both to the patient and physician. * * *

LECTURE XI.

EXAMINATION OF THE THORAX.

In making an examination of the thorax strip your patient to the waist, seat him on a stool and then observe carefully the appearance. Normally the right side is a little larger than the left—bulges more, as it were. You may also find a flattened condition of the anterior surface. Note whether there is a sinking above the clavicle or between the ribs—whether the soft parts sink in below the ribs, all of which denotes difficult breathing and cause must be found. On the other hand, you may find a bulging of the entire anterior wall (pigeon breast). Note the ensiform cartilage. I have found it hard and sticking out in front; also in other cases depressed and pointing inward. Note the attachment of the ribs, or their cartilages, to the sternum, often I have found them very irregular and the end of the rib either too much depressed or drawn up too close to its neighbor, engaging the intercostal nerves, causing neuralgia and pain. Note the clavicle, sometimes you will find either end flattened or depressed or down too far, in or out. Learn the structures under these articulations and their functions, then you will know what the result ought to be by interference with them. Because of a tightening of all the muscles of the thorax or of the intercostal muscles the chest walls are rigid and all of the ribs are drawn too closely together; in such cases you will generally find intercostal pain and soreness along the course of

the ribs and sometimes the nerves of the arm are involved. Not all of the irregularity which you may find on the surface of the thorax is due to displacements, for you may have here or in the vertebræ one rib heavier and thicker than its mate, and of course it will make an irregularity. But find the articular ends and note their approximation to the other articular surfaces. Hazzard gives the following rules for counting the ribs:

RULES FOR COUNTING THE RIBS.

"In passing your fingers down the sternum in front you can readily detect where the first part ends and the second part begins. Here is the junction of the cartilage of the second rib with the sternum. The first rib is found by feeling behind the clavicle above, at about the junction of the middle and inner thirds. You can by deep pressure come to the first rib. The first and second ribs give a great deal of trouble, and it is important to keep in mind this rule to find them. In the male the nipple is usually between the third and fourth ribs, three-quarters of an inch external to the line of the cartilages. It is said that the lower border of the pectoralis major corresponds in direction with the fifth rib; that a horizontal line drawn from the nipple around the body will cut the sixth intercostal space at a point midway between the sternum and the spine.

"When the arm is raised the highest visible digitation of the serratus magnus corresponds with the sixth rib, and the seventh and eighth digitations correspond with the seventh and eighth ribs below. I have already noted that the scapula lies on the ribs

from the second to the seventh inclusive. The eleventh and twelfth ribs are readily recognized, even in fleshy persons, at the outer edge of the erector spine, sloping downward. The sternal end of each rib is lower than the end which joins the spine, and it is said that if a horizontal line were drawn from the middle of the third costal cartilage at its junction with the sternum, it would touch the body of the sixth dorsal vertebra. The end of the sternum is upon a level with the tenth dorsal vertebra, its length varying some in different individuals, more in females than in males." Along the posterior surface of the thorax you may find the ribs too widely separated or the ends dislocated from the vertebræ—not torn away, but slipped or twisted in any direction. The first and second ribs are usually drawn upward. That is the most common abnormal position for them, and it is just as common a rule that the last two are drawn down, probably because in the upper ones the scalene muscles are attached in such a manner that when contracted they draw the ribs up, while in the lower ones the *Quadratus Lumborum* is attached to the last and draws both it and the eleventh one downwards. The position of the first and second ribs is of great importance because by pressure upon the sympathetic ganglion and all the important nerve and blood supply in that locality the heart and lungs are very much affected, and often serious symptoms may be relieved by reducing pressure, either from these ribs, the clavicle, or from vertebræ, and it may be all three structures in this region. It is such cases as this which have been diagnosed as organic heart trouble, which the Osteopath cures miraculously, so it appears to those who do not understand the theory of

Osteopathy. To make a diagnosis of malposition in these ribs first find whether the clavicle is in its normal position, then feel down about the middle of the clavicle, press down and back, and you will find the first rib. If it is slipped up it will come to or near the upper margin of the clavicle. If it is down the distance between them will be greater. Hazzard says, "A depression at the junction of the end of the first rib with the sternum usually indicates that this rib is raised and thus drawn away from the articulation. A prominence at the same place indicates the reverse. Such points are usually tender to the touch and the tenderness may extend along the rib as far as the clavicle."

The second rib is more difficult to treat, but the articulation in front is at the junction of the manubrium or upper bone of the sternum with the second bone or gladiolas in the back. A dislocation of this rib may be determined by a soreness over the attachment with the first dorsal. You can make deep pressure upon the head of this rib by measuring one inch outward from the posterior spinous process of the first dorsal vertebra. Of course the head of this rib cannot be well distinguished because of the thick muscles at this point, but you can detect soreness and work about the head ⁱⁿ such a manner as to relieve its pressure upon other structures.

The floating ribs often overlap one another at the loose ends. Sometimes this gives no inconvenience, when of course you let them alone, but again they are often responsible for pain in the side or limb, and may even and indeed often do press in upon the liver, spleen or intestines, causing congestion, pain and inhibition of these organs. The position of all the

lower ribs is rather easy to determine because of the softer walls about them, and because by raising the limbs of the patient you may relax the muscles of the abdomen and feel through them the hard rib.

LECTURE XII.

THE CLAVICLE AND ARM.

Displacement of the clavicle is of great importance because it is a landmark for the first and second ribs and because of so many important attachments to it, and more than all else because of the important nerve and blood supply under and about it.

The clavicle may be displaced in any direction, at one end or at both. The most common displacement is downward at the outer end, because of the attachment of the deltoid and pectorialis major muscles. Dr. Still's manner of correcting this is to place his fingers against the anterior edge of the sternal end of the clavicle, then with his other hand to draw the patient's arm inwards across and close to the chest, thus relaxing the muscles; then, while pushing upward upon the anterior edge of the clavicle, to draw the arm up and backward. If the clavicle is slipped up at the acromial end it will probably impinge on the fibers of the brachial plexus, causing pain; or catch some fibers of the deltoid muscle and the patient comes to you complaining of rheumatism of the shoulder, neck and arm. Here Dr. Still raises the arm to relax the muscles over the shoulder, and placing his fingers behind the part that is slipped up moves the arm in different directions until the end slips back to its normal place. At the sternal end you treat in much the same way, bringing the arm forward, first to relax the muscles and give room for the fingers of your other hand, then move the

arm forward, downward and backward, thus tensing the muscles and making them draw the bone back while you push it. The forward or backward positions are not as frequent, though perhaps that is an error, for in asthma I almost invariably find the clavicle drawn back and downward, making great pressure upon the blood supply and trachea. In asthma there is a general spasm of muscular tissue, and the muscles about the neck and chest are in a state of contraction all the time, which accounts for this malposition, and by manipulating the muscles, relaxing them, removing the clavicle and perhaps the first and second ribs from their false positions, and finally by making gentle pressure over the recurrent laryngeal and phrenic nerves I have relieved many asthmatic patients who were suffering intensely because of difficult breathing. In these cases I free the clavicle by placing the fingers of one hand above and behind it while I raise the arm up and bring it across the patient's face and over the head and back and then downward.

Of course while you are examining the clavicle the head of the humerus must be looked to, for much of the pain in the axilla, chest, shoulder or back, swelling of the lymphatics and pain in the arm or hand may be due to pressure from the head of the humerus. One very common displacement is a slipping of the head of the humerus out against the acromion or coracoid process. Probably it is more often drawn into this position by the contracted muscle, causing the tendons to bind or hold it here, or there may be some of the deltoid fibers under the coracoid process. At any rate we often find patients who complain of a catch there and of inhibition in movements of the arm upwards or backwards, and

by drawing the arm slowly upward and backward, then manipulating over the process and drawing the arm out and downward, you may relieve the difficulty. Or you may find the biceps contracted and by straightening the arm and drawing it backward you bring tension upon it and inhibit its nerve force, thus relaxing the spasm and relieving the pain.

THE ARM.

Going on down the arm you may find soreness the whole length upon deep pressure, especially along the course of the median nerve, which shows pressure at some point upon this nerve; usually from the muscles, which you may find hard in small areas. These sore spots in the muscles are probably due to a congested area which retains the poisonous gases or ptomaines from the venous blood, but when you find soreness the full length of the arm you may expect to find the median nerve engaged some place.

At the elbow you may find different dislocations. The ulna and radius may both be drawn backward or internally or externally. The ulna may be displaced backward and the radius forward. The olecranon process of the ulna and the condyles of the humerus are your guides as to normal positions of the articulation at the elbow. After injury you may have simply a stiffness of this joint, due most commonly to contracted muscles and tendons, and sometimes to inflammatory exudate, or, if of long standing, ankylosis. A systematic manipulation of the muscles, not alone of the arm but of the shoulder and back, gradually relaxing and stretching them with movements of the joint to favor circulation and carry away inflammatory products, relieving stiffness

of the joint, has always given me a most perfect result.

At the wrist you most often have both bones dislocated either backward or forward, though it may be only one of the long bones; but the small bones of the wrist may be shoved or pulled about in many ways, and the sore points will show this at once. The fingers are easily dislocated and easily readjusted. Always treat the muscles about a dislocation first, thus relaxing them, then pull gently and gradually out upon the displaced bone before moving it in the direction in which it needs to go. The tendency to the normal will help greatly in correcting all displacements.

I have said little so far about the **scapula** which is bound down so securely by muscles that the only trouble from it will be contraction of these muscles which draw it too closely down or a relaxed condition which with a bulging of the chest walls gives the scapula the wing-like appearance which we sometimes see. We often stretch these muscles and raise the scapula when there is too much pressure upon the nerve and blood supply beneath.

LECTURE XIII.

THE NECK, FACE AND HEAD.

Examination of the neck, face and head. As I have told you the neck is a most important point to the Osteopath and much more important to the patient. The structures here are very superficial and through them and their connections the operator may influence the entire body directly and indirectly.

LANDMARKS OF THE NECK.

The median line of the neck is called by surgeons the line of safety because in this locality there are no important nerves or blood vessels and the trachea is very superficial, making it possible to operate here for membranous croup or for other cause with comparative safety. Beginning from above just under and well up on either side of the angle of the lower maxilla are the tonsils which may be readily felt externally and are easily treated here, next is the **hyoid bone**, on a level with and just beneath the middle of the lower jaw. The gap just below it corresponds to the apex of the epiglottis. **The thyroid cartilage** is easily traced, especially the upper and lower cornuæ. The lateral lobes of the **thyroid gland** lie on each side of the thyroid cartilage, and is important because of the common enlargement of the gland known as goiter. The **superior thyroid artery** lies across the center between these lobes and you may feel the pulsation by the finger. **The circothyroid membrane** is next in line and is the usual point for the operation of laryngotomy. The cri-

coid cartilage, which is next, corresponds to the junction of the fifth and sixth cervical vertebræ and is the level of the œsophagus. The superior opening of the œsophagus is about an inch and a half above the superior border of the sternum. The trachea arises above the sternum for the length of 7 to 8 rings, but cannot be felt because covered by muscles and is deeper than the structures above it.

At the sides of the neck the sternomastoid muscle is the most prominent and is attached to the mastoid process of the temporal bone above and to the sternum and clavicle below. The carotid artery and pneumogastric nerve pass down under the anterior margin of this muscle and under the rectus capitis anticus muscle. The external jugular vein corresponds to a line drawn from the angle of the lower jaw or inferior maxillary bone to a point at the middle of the clavicle. In the suboccipital fossæ or hollows of the neck, between and under the mastoid process and the attachment of the trapezius muscle, you get the great and suboccipital nerves, and in this region you often find soreness, especially in patients who suffer from stomach trouble, indigestion, etc., probably because of the proximity of the pneumogastric nerve and also the spinal accessory, which with the glossopharyngeal makes its exit through the same foramina (the jugular) with the pneumogastric. The phrenic nerve arises from the third, fourth and fifth cervical nerves, and may be reached at the anterior border of the scalini muscles in front of the transverse processes of the vertebræ. You may also reach this nerve at the inner side of the sternoclavicular articulation, and this is the usual point for treatment of this nerve. By making pressure upon the nerve at this point you rarely fail to stop hic-

coughs, no matter how persistent. Of course you will note the position of the vertebræ and the greater thickness of the skin in the back of the neck, also the ligamentum nuchæ deeper in and extending from the occipital protuberance to the spinous process of all the cervical vertebræ.

The lymphatic glands may be and often are enlarged in the neck and along the spine, and the latter are especially irritating to the nerves by the friction which they make in slipping over them with the patient's movements.

LANDMARKS OF THE FACE.

The most important points here are the three terminal branches of the fifth nerve, which make their exits from the supraorbital, infraorbital and mental foramina. Hazzard says "a line passed from the supraorbital foramina (which is at the inner and upper borders of the orbital arch, or just at the inner edge of the eyebrow) between the two bicuspsids will pass over the remaining two foramina." He also says, "The supraorbital branches of the fifth nerve run from the supraorbital notch back over the temple, forming an angle of about forty degrees with the line of the superciliary ridges. They may be easily felt beneath the tissues and can be traced back over the temples." The supraorbital branch is usually found to be very sore at the place of exit, i. e., the supraorbital notch, in headache and neuralgia, and friction or pressure over this point, with a thorough loosening of all tissues of the neck, head and face, relieves both these symptoms.

The superior and inferior dental nerve runs along the upper border of the superior maxillary and the inferior maxillary bones respectively. The seventh

nerve may be reached at the middle of the outer edge of the ramus of the inferior maxillary bone just in front of the lobe of the ear.

LANDMARKS OF THE HEAD.

At the junction of the inner and middle thirds of the supraorbital arch you will be able to feel the pulsating supraorbital artery as it passes up over the forehead.

The temporal artery may be an inch and a quarter behind the external angular process of the frontal bone.

The bony prominences of the head are the occipital protuberance, which is the thick prominence at the back of the head, just above the hollow of the neck.

The parietal eminences are on either side of the head above the ears, and the temples, as you know, are the thinnest portion of the skull.

The occipital artery is felt near the middle of a line drawn from the occipital protuberance to the mastoid process, which is the prominence just back of and below the ear.

The posterior auricular artery may be felt near the apex of the mastoid process. The scalp is thick and should be easily moved over the cranium, but is often found tight and immovable. You may find small tumors of the scalp, which are usually benign and only enlargements of the sebaceous glands. A tumor of the skull will be immovable, while these move about under the examining finger. The scalp is usually tight and contracted in headache cases, and in treating for this disorder always treat well over the head, moving the scalp in all directions. The anterior fontanelle in the infant is a diagnostic point. Normally it should be level but if there is an

abnormal accumulation of cerebral fluid it will rise above the level, while if the child is suffering from any depleting disease, such as diarrhoea for instance, you may find the fontanelles sunken.

The eye, ear, nose and throat come under consideration in examining the head. I never meddle with the ear. Let a specialist treat this delicate and difficult organ, but much may be done by treating the eye osteopathically. The superior cervical ganglion is the chief point from which to treat the eye through the ascending branch to the carotid and cavernous plexuses and through the connection which it has with the fifth nerve. The ciliary ganglion also connects with the superior cervical ganglion, and hence by freeing the muscles in the neck and face and stimulating or inhibiting the superior cervical ganglion we may relieve congestion and inflammation, and by treating the end nerves through the eye itself we may affect the nervous organism. I have found that many of my patients who wear glasses are able to leave them off and do without them after being treated osteopathically. The muscles of the eye may be strengthened and the glands and superficial blood vessels emptied. One of my most successful methods of treating conjunctivitis is to slip my forefinger up under the upper lid and gently roll the lid between the finger and thumb. It relieves the swollen blood vessels and the roughness and scratching which they cause to the cornea. The tear ducts, which, you know, begin at the inner canthus of the eye, may be occluded and swollen. They may be relieved by treating all around them and making pressure over the infraorbital artery. The nose, mouth and throat may show hyperæmia or growths, such as polypi in the nose, or hypertrophied turbinated bones. In the

pharynx and throat you may find an inflamed, reddened mucous membrane, with enlarged tonsils and uvula, and besides the thorough treatment about the neck I treat inside the throat, over the hard palate, to the tonsils and uvula.

So far we have had in a superficial manner the landmarks and examination of the spine, thorax, arm, neck, face and head. I have given them in this order because it is my manner of examining a patient. My next move always is to make a thorough examination of the heart and lungs before leaving the thorax and upper part of the body.

LECTURE XIV.

EXAMINATION OF THE HEART AND LUNGS.

Examination of the heart and lungs should be made with the patient stripped to the waist and seated upon a stool, with the arm dropped and hanging easily at the sides. When making an examination of the posterior part of the chest have the patient fold the arms to draw the scapulæ forward and throw the lungs back against the chest wall by having the patient bend forward slightly. The chief method of examining the chest is by inspection, percussion, palpation and auscultation, or, in other words, by sight, feeling and sound.

I have already given you the points for inspection and will not repeat them here, but will see what may be learned by **percussion**. In this form of examination place the left hand open, with the palm and fingers pressed lightly against the chest wall and with the middle and third fingers of the right hand strike lightly against the fingers, usually the second and third, of the left hand, moving the hand over the surface from above downward, beginning in the suprascapular region and examining both sides—that is, examine a corresponding area on the opposite side each time you move the hand. Practice this until you learn the difference between normal and abnormal resonance or dullness, as the case may be.

By this I mean resonance over the normal air cells of the lungs as compared with the increased resonance brought out by percussion over the emphysematous chest, which contains an abnormal

amount of air, and the normal dullness which you get over any of the solid organs, such as the heart or liver, and the dullness caused by presence of fluid in the lung cells or pleural cavity. You may also distinguish by percussion whether the heart, lungs or liver, or for that matter any organ in the body is enlarged, if you know the normal boundaries, because by this means you can follow the dullness of the organ. By **palpation** we may distinguish the temperature of the skin, pulsation of arteries and any tumor or growth under the skin, or feel irregularities which are not visible upon inspection.

Auscultation may be made either by applying the ear directly to the chest wall, i. e., immediate auscultation, or by the stethoscope, which is more satisfactory, though I always use both methods because while the ear alone is not as sensitive, that which you do hear is within the chest; while in using the stethoscope you must keep in mind the creaking of the instrument or the brushing of clothing or hair against it, or some sound from without which may simulate the sounds within the chest. Here you must learn by practice to distinguish between the normal and abnormal sounds. The air which is normally contained in the lung cells gives a gentle little blowing sound which is heard alike all over the chest. If there is mucus or other fluid in the bronchi or lung cells you get what we call rales, which are divided into classes and denote respectively the condition of the lungs or bronchi. If there is inflammation the mucous membrane lining the bronchi and lung cells is dry, hot and glazed, and as the surfaces come together and separate, in inspiration and expiration they stick and pull apart, which gives a little crackling

sound like rolling hair between your fingers near the ear. If there is congestion and the vessels are pouring out fluid into the tubes or cells you will get a rattling or rustling sound, etc. If the fluid is thick or has become fibrinous and solid you get no sound through the air cells, but I cannot give you these different diagnostic signs as I should in such a limited work, and so you must study these points from better authority, such as Dr. E. F. Ingall's most excellent work on physical diagnosis of the chest, and then only long practice will give you a real knowledge of what the different sounds in the chest mean. Many of the lung symptoms which you will find are due to external interference with nerve and blood supply and you must look well to the vertebræ, ribs, clavicles and muscles, and remember the influence which work upon the superior, middle and inferior ganglion of the sympathetic nervous system has in regulating nerve and blood supply to the intimate parts of the internal organs. Of course if you have an organic disease, such as tuberculosis or pneumonia, you will be able to distinguish them by the methods given if you practice well. If you have a serious case of lung disease always have the sputum examined. The analysis of the fluids of the body is indispensable and physicians today rarely undertake this themselves unless specialists in this line, hence it will be better to send all specimens to a laboratory or else to especially prepare yourself for this work. However, I never feel that I can make a reliable diagnosis without an analysis of the sputum, urine, blood or whatever fluids are involved. Tuberculosis of the lung begins in the upper part of the lobe and you get the first sounds in the suprascapular region. Pneumonia begins in

the lower part of the lungs and you will get your first signs lower down in the posterior or subscapular region of the chest and under the arm in the infra-axillary region. In bronchitis the rales may be most easily heard over the sternum and on either side of both the sternum and vertebræ in the interscapular region or between the scapulæ.

THE HEART.

The normal boundaries of the heart are as follows: The heart lies in a slanting position in the thorax, with the apex pointing to the left at the fifth intercostal space, and we get the normal apex beat at a circle one inch and a half to the inner border of the nipple or three and one-fourth inches from the middle line of the sternum in the fifth intercostal space.

The base of the heart lies one and a half inches to the right of the sternum at the third intercostal space, and extends across the inner border of the fifth rib posteriorly. Morris says the base corresponds to the middle four dorsal vertebræ and the apex to the chest wall on the left side, between the fifth and sixth rib cartilage. A line drawn across the sternum about the level of the lower borders of the second costal cartilages, passing half an inch to the right of the sternum and one inch to the left, will indicate the upper limit and roots of the great vessels. The adult heart measures about five inches from base to apex and three and one-half inches across at its widest part. It is about two and one-half inches at its thickest part, weighs about eleven ounces in the male and nine in the female. The location of the semilunar valves are behind the junction of the third rib with the sternum on the left side. The semilunar valves are opposite the third

intercostal space at the left border of the sternum. The tricuspid is near the middle line and behind the sternum at the level of the fourth space. The mitral valves lie behind the sternum, opposite the fourth cartilages of the left side. The murmurs from these valves are transmitted so that the mitral sounds are heard most plainly at the apex, and if transmitted to the left side denote mitral insufficiency and regurgitation. The aortic murmur is heard at the right over the junction of the first rib with the sternum, while the tricuspid is most plainly heard in the location given above. The nerve supply, as you know, is through the pneumogastric and the superior cervical ganglion, with the center in the medulla. Quain, as quoted by Hazzard, says there are accelerator fibers for the heart derived from the upper four or five dorsals, but chiefly from the second and third. The spinal fibers end and sympathetic fibers begin in the middle and lower cervical, also in the first thoracic region. He also says that vasoconstrictor fibers to pulmonary vessels have been found in the dog from the second to the seventh dorsal spinal nerves, and this is where we treat to effect the lungs in man and get results. Hazzard quotes also from Howell to show that stimulation of the pneumogastric in the neck constricts pulmonary vessels, while stimulation of the sympathetics of the neck dilate the pulmonary vessels. He notes, too, a reflex contraction of the pulmonary vessels by stimulation of some other nerve, as the sciatic intercostals, abdominal pneumogastriacs or abdominal sympathetics, and he quotes from Robinson the note that the heart and aorta are affected alone by influences which affect the local sympathetic centers. Dr. Still is quoted as saying that the aorta may be con-

stricted at the opening through which it passes in the diaphragm, which may be relaxed at its vault and cause a constriction about the aorta. Thus, he says, the heart goes to pounding to force the blood through, and the result is palpitation. Dr. Still diagnosed such a condition in himself which he said was relieved by compressing the lower part of the thorax and allowing the diaphragm to bulge upward. In somewhat the same manner and probably more often the stomach distends with gas and makes pressure upon the aorta or the heart itself and causes violent action of that organ. In examining the heart do not neglect the pulse beat, which is most commonly sought at the left wrist at the radial artery and should be from 72-78 per minute. You may tell by the pulse whether the heart beats too fast, too strong, or vice versa; whether it is regular, irregular or intermittent; whether easily compressed or bounding. In short, if you learn the character of the normal pulse you will be easily enabled to tell when it is abnormal. Before I leave the thorax I wish to give you much that Dr. Hazzard says on the splanchnic nerves, because I know of no one who gives them so well, and I hope every one who sees this imperfect little work of mine, which owes so much to him, will provide themselves with a copy of "Hazzard's Principles of Osteopathy."

LECTURE XV.

THE SPLANCHNIC NERVES.

Hazzard says, "The splanchnics are some of the most important tools with which the Osteopath works. They are of such far-reaching connection that their importance becomes apparent, hence their constant use by the Osteopath."

The splanchnics are the nerves which govern the viscera and they are the sympathetics from the lateral chains of thoracic ganglia.

The great splanchnic arises from the fifth or sixth dorsal and from all the thoracic ganglia below down to the ninth or tenth.

It perforates the diaphragm and joins the lower part of the semilunar ganglion. In the chest it sometimes divides and forms a plexus with the smaller splanchnic. The fibers are white, medulated, most of them, and come from the anterior roots of the spinal nerves. The greater splanchnic gives branches to the aorta and front of the vertebræ; the smaller splanchnic arises from the ninth and tenth, sometimes from the tenth and eleventh, thoracic ganglion, or it may arise from the sympathetic cord itself without the intervention of ganglia. It also passes through the diaphragm, sometimes separately, sometimes with the cord of the greater splanchnic. Like the greater splanchnic it joins the lower part of the semilunar ganglion and sends branches to the renal splanchnic, if that is lacking or is small.

The smallest or renal splanchnic, if present, arises

from the last thoracic ganglion and passes through the diaphragm with the sympathetic cord and goes to the renal plexus.

A fourth splanchnic is sometimes found in the cervical region. Hazzard quotes Gaskell, as quoted by Quain and substantiated by Byron Robinson, as saying there are visceral branches from the second, third and fourth sacral nerves, and these he calls the sacral or pelvic splanchnics.

The cervico-cranial rami viscerales are visceral branches from the spinal accessory, pneumogastric, glossopharyngeal, and facial nerves. "So," Hazzard says, "you see that visceral nerves have their origin from these cranial nerves, also a branch from the ciliary ganglion from the third nerve." He quotes Byron Robinson as saying, "There are certain fine white medulated nerves which Gaskell mentioned and which pass from the spinal cord in the white rami communicantes between the second dorsal and second lumbar nerves, inclusively, to supply viscera and blood vessels. These nerves should be called, as Gaskell suggests, splanchnics. Hence we will have first the thoracic splanchnics, second the abdominal splanchnics and third the pelvic splanchnics."

Hazzard says above the second dorsal and below the second lumbar gray rami communicantes are found, and Robinson calls them peripheral supplying the parietes of the body. He quotes further from Quain that "The medulated fibers such as we find in the splanchnics which pass in the sympathetic system are classed by Kolleker as (a) sensory, (b) vaso- and viscerconstrictors, and (c) vaso- and visceroinhibitors," and says, "Hence we have passing from the spinal cord into the great prevertebral plexuses in the different regions these sensory- vaso-

dilator and constrictor and visceroinhibitor and constrictor fibers."

Quain says the sensory are found only passing from the cranial nerves, but that the visceral and vasomotor fibers are found all the way down the cord. Hence the visceral and vasomotor fibers are found in the splanchnics. He quotes Quain further in that the splanchnic nerves proper act first as visceroinhibiting fibers for the stomach and intestines, second as vasomotor fibers to the abdominal blood vessels, third as afferent fibers from the abdominal viscera—that is, fibers from the abdominal viscera back to the center, and says that explains why it is that we get secondary lesions, as we call them. You may have some trouble in a viscus, knowing that you can have different fibers from the viscus to the center you can account for the center being affected and the impulse coming out from it to the posterior spinal nerves, for example, and causing contraction of the muscles in the back. Hazzard goes on to show the significance of the splanchnics to the Osteopath by saying, "In the first place they must be connected with the spinal cord itself, since they arise from the anterior roots and run through the cord to the brain. It is doubtful how close a connection they have with the brain centers, but they have at least a close connection with the bulbar center, the vasoconstrictor center of the medulla. Then it is probable that these splanchnics have a close connection with cardiac and pulmonary fibers arising from the upper part of the spinal cords, because we have seen that the center for the lungs extends from the second and seventh dorsal and that we work in the upper dorsal region for the heart, and there are certain vasomotor fibers from these regions to the heart and lungs, so that

it is almost indisputable that there is a connection between the splanchnics and what we might call other splanchnics for the heart and lungs.

"In the next place we have seen that the first two splanchnic nerves join the semilunar ganglion, and the third the renal ganglion and they are connected directly with the solar plexus and through it with the other great prevertebral plexus, the hypogastric plexus, and through that, with those secondary plexuses such as the superior and inferior mesenteric, hemorrhoidal, portal, Auerbach's and Meissner's, and the various plexuses throughout the pelvis and elsewhere. Hence any one who sees the significance of osteopathic work will see the significance of this far-reaching connection with visceral and organic life. Then, again, remember that in the thorax the first or greater splanchnic sends branches directly to the aorta itself. Hence it is that the operator so frequently works upon the splanchnics. It does not make any difference what kind of trouble you may have, the general health is likely to be affected and it must be attended to; and whether you are working upon the stomach, liver, portal system, upon the intestines or pelvic viscera, you will work in part upon the splanchnics."

I have quoted so much at large from these excellent authorities because I want you to fully understand the great importance of the splanchnic nerves. They and their connections explain the osteopathic centers and the manner of influencing local or general circulation. It is a favorite plan, both in medicine and Osteopathy, to increase circulation at one point to relieve congestion, and because of the immense blood supply and of the splanchnic control here the abdomen is a common ground for such a

result. The M. D. will give a cathartic with a view to increasing the amount of blood in the intestinal tract and thus taking it from the head, lungs, liver or whatever part may be over-gorged. It has been said that a man may bleed to death within his own belly, meaning that you may attract all of the blood of the body to the abdomen and thus deplete the brain, heart, lungs, etc., as to cause death. For another example: It was a common treatment at the Illinois Eastern Hospital for the Insane to give sleepless patients food during the night, instead of medical hypnotics, because we figured that the blood naturally is attracted to an active part. It goes where it is most needed and so by inducing gentle digestion or setting the stomach to work the blood is attracted from the brain to the stomach, and the brain being relieved of the over-amount of blood becomes quiet and the patient sleeps; and so by treating the splanchnics you often get such a result. Headache is largely relieved in this way, when it is reflex as well as when due to local congestion.

LECTURE XVI.

THE ABDOMEN.

Landmarks. In examining the abdomen have the patient assume the dorsal position, with the knees flexed and the head slightly raised in order to relax the abdominal muscles. The regions of the abdomen are the epigastric, umbilical and hypogastric. The epigastric region lies between the diaphragm above or between the lower end of the sternum and a line drawn from the anterior tips of the tenth ribs. This space is divided again upon each side by a line which would pass down from the nipples to the lower border of the epigastric region, and these side regions are known as the right and left hypochondriacs. Below the epigastric region is the umbilical, bounded below by a line drawn from tip to tip of the crest of the ilium, and this region is divided, as is the epigastric, into three divisions by a line passing down from the tips of the tenth ribs and forming on either side of the umbilical region the right and left lumbar regions.

Below these three regions comes the hypogastric in the center, and on either side of the line, which comes from the anterior tip of the tenth rib to the pubic spines are the right and left iliac region, and just over the pubes the pubic region, which is bounded below by the two Poupart's ligaments, one on each side. It will be good practice if you take blue chalk and outline these regions on the living subject. However, you will find them well diagramed in your anatomy.

The stomach when empty or not abnormal lies in the epigastric region, with one lobe of the liver lying partly across it. The pyloric orifice is found on the right, at the edge of the sternum, about where the cartilage of the eighth rib joins, and is covered by the liver. The cardiac orifice is just below the cartilage of the seventh rib, where it joins the sternum. Remember, the stomach is a movable organ and may become so distended with gas as to push the other organs out of their normal positions, and often presses up on the heart and lungs, causing dyspnea or difficult breathing.

The liver lies in the right hypochondriac and partly in the epigastric regions, for, as I told you, one lobe of this organ lies over the stomach and extends into the epigastric region as far as the inner border of the left mamma and downward half way to the umbilicus. Upward the liver ascends to the diaphragm, or about an inch below the nipples, and the lower and posterior borders of this organ are at the tenth dorsal spine. Of course these are dimensions for the normal liver. The gall bladder is behind the edge of the liver at the tip of the ninth rib, and cannot be felt distinctly, but is treated at this point. The gall duct is in a reversed S shape, and extends from the gall bladder to a point a little to the right of the umbilicus.

The spleen lies to the left, below the ninth, tenth and eleventh ribs, and if enlarged may be felt here, and is treated at this point.

The pancreas lies back of the stomach and crosses the aorta and spleen transversely at the level of the second lumbar vertebra. It cannot be outlined when normal unless in a very thin person.

The kidneys cannot be felt, but may be treated

by pressure at the outer edge of the erector spinæ muscle, between the lower ribs and the crest of the ilium, and as you will see are in a different location than the laity place them, for people almost universally place their hand over the sacrum as their location for the kidneys. The kidney really corresponds in position to the lower two dorsal and upper two lumbar vertebræ. If the kidney is enlarged or tender pressure here will produce pain or a sense of deep soreness, and you may be deceived in examining through the abdominal walls by masses of fecal matter in the bowels, taking them for enlarged kidney or a tumor.

The ascending colon is in the right lumbar region, over the kidney.

The ileocæcal valve lies in the right iliac fossa.

The descending colon and sigmoid flexure are in a corresponding position on the left side and transversely above the umbilicus is the transverse colon.

The small intestine lies behind the umbilicus. The ileum contains Peyer's patches, which lie in the location of the ileocæcal valve, at the edge of the right iliac fossa. These glands are important in typhoid fever because first involved, and the tenderness and gurgling in this region is, with other symptoms, diagnostic of typhoid fever. In treating both in this fever or in enteritis you must be very careful for fear of causing hemorrhage or perforation.

LECTURE XVII.

EXAMINATION OF THE ABDOMEN.

In making an examination of the abdomen inspection, palpation and percussion are the most common methods. By **inspection** you may notice the color of the skin. If the liver is chronically inactive you will often find the abdomen marked by yellow or brown patches. In pregnancy there are many discolorations and the *linæ albæ* are always present, and are small white lines under the skin. If there is hernia or any tumor or enlargement present the eye may usually detect it; and in eruptive diseases, as in typhoid or scarlet fever, the eruption may often be found here when it does not show on any other part of the body. **Palpation** is the most useful method of examination, and in examining or treating this region be careful to gently lay the palm of the hand flat upon the surface and move slowly and gradually, for the reason that any sudden blow or movement against the abdominal walls causes the muscles to contract and you can tell nothing of what the condition is beneath them. In palpating first notice temperature, whether normal and equal. In some liver troubles there are cold areas and where a nerve is obstructed at the spine you may find a cold streak following the course of the nerve. In any disease which causes dyspnea or difficult breathing, as in pulmonary tuberculosis, the abdomen is apt to be retracted, and in emaciated people you will often find the abdomen retracted. In painful diseases of the thorax,

as in pleurisy, the respiratory motions of the abdomen are increased, but if there is great pain in this region, as in peritonitis, the abdominal movements are restricted. In intestinal indigestion and constipation there is much distention. By gentle pressure you may feel the pulsation of the aorta, and where there is fecal impaction the mass may be felt under the hand. Hazzard says, "If there is pain in the stomach, which increases upon pressure over the pit of the stomach, it is inflammatory, as in catarrh of the stomach; if it disappears, it is said to be nervous."

If the liver or spleen or stomach are enlarged you will be able to feel them and sometimes a floating kidney is easily outlined, as is an ovarian or fibroid tumor, which may arise out of the pelvis into the abdominal cavity, and in rare cases the bladder may be so greatly distended as to be felt here.

Percussion will show you the location of the solid organs, which give a dullness on percussion. Where there is gas, as in the intestines or in the stomach, you get a high-pitched tympanitic sound. Practice will teach you the difference between the tympanitic sound where gas is present and the resonant sound where there is air in a cavity, as in the chest. The liver, as I have told you, lies very near the surface in the median line, and when much enlarged may extend well down below the ribs and across the front. It feels smooth and elastic if not hardened or congested, when it has an inelastic or putty feeling to the examining hand. By gently going deeply into the abdominal cavity you may feel the bodies of the vertebrae and the large nerves and blood vessels which lie along on the inner or anterior surface of the spinal column. The appendix may be felt if it or the

tissues about it are much swollen or tender at a point about midway between the umbilicus and the anterior superior spine of the ilium. **The gall bladder** may be felt also if there is much distention and tenderness or if there are gall stones present, and the bile duct may be felt at the umbilicus if swollen or tender from catarrh or if containing gall stones.

LECTURE XVIII.

THE PELVIS.

Landmarks. The pelvis, as you know, is the bony basin formed by the innominate bones and the sacrum and coccyx, or of the ilium and ischium on either side, the pubes in front and the sacrum and coccyx behind, and contains the lower bowel, the uterus and its appendages in the female and the bladder. The superior spines and crest of the ilium may be easily outlined, and these landmarks are important points for measurements and as guides to the surgeon. McBurney's point, for instance, is midway between the umbilicus and the anterior superior spine of the right ilium, and is the point of operation for appendicitis. The pubis, of course, is very distinct across the front and for external examination marks to the hand the limit of the false pelvis, which lies above it and in the flare of the iliacs. By making gentle pressure with the palm of the hand above the pubes you may engage the fundus or top of the body of the uterus, you will be able to detect it at once as a small hard ball which easily fits into the hollow of the hand.

Poupart's ligament is a thickening of the aponeurosis of the external oblique muscle and extends from the anterior superior spine of the ilium to the spine of the pubes, and marks the diagnostic point between inguinal and femoral hernia, the first being above the ligament. The spine of the pubes is also a point of diagnosis, the hernial sac lying to

the inside of the public spine in inguinal hernia, while the reverse is the case in femoral hernia.

The bladder may be outlined if filled and must be distinguished from the uterus or a uterine tumor by the fluctuating elastic feeling in distinction to the hard, solid uterus.

The ovaries are not discernible to the examining hand on the surface unless greatly enlarged by tumor or other abnormal condition, as they lie behind Poupart's ligament in the inguinal region.

The perineum externally is the space between the external genitals and the tip of the coccyx and is the floor of the pelvis. It is bounded by the rami of the pubes and ischiæ, the tuberosities of the ischiæ, the great sacro-sciatic ligament and the tip of the coccyx. Hazzard says, "The healthy perineum bows or curves up to support and hold up the pelvic contents."

Posteriorly we find from above down the promontory of the sacrum and on either side the superior posterior spines of the ilia, on a line which would pass through the second sacral spine and mark the articulation of the sacrum with the ilium. In the middle line are the spines of the sacrum and the coccyx. The third spine of the sacrum is the limit of the membranes of the cord and of the cerebro-spinal fluid in the spinal canal. The glutei muscles form the buttocks and unless flabby, as in emaciation, mask the important structures beneath, although pressure here illicit pain over an engaged nerve.

The fold of the buttock is the lower edge of these muscles and the thigh, and is the point for pressure upon the great sciatic nerve.

The great trochanter is what is commonly

called the hip and is about midway between the tuberosity of the ischium and the superior spines of the ilium. You may also find the sciatic nerve by deep pressure between the tuberosity and the ischium and the trochanter. The tuberosity of the ischia are the parts of the pelvis upon which we rest when seated, and perhaps for external examination may best be described as located between the anus or opening from the bowel and the great trochanter.

The great sacro-sciatic notch may be determined by rotating the thigh forward and drawing a line from the posterior superior spine of the ischium to the top of the trochanter, when the top of the notch and gluteal artery is found at the junction of the upper with the middle two-thirds of the line. The spine of the ischium is located by drawing a line from the posterior superior spine of the ilium to the outer side of the tuberosity of the ischium, and the pudic nerve and artery cross the ischial spine. By stimulating this nerve Hazzard says you may cause contraction of the perineum, and by stimulating the lower sacral nerves you cause a contraction of the coccygeus muscle and help to raise the bowel and pelvic contents. He also says, "Pressure upon these vessels, as by continued sitting, is a common source of uterine and pelvic disorders."

LECTURE XIX.

EXAMINATION OF THE PELVIS.

Examination of the pelvis is entirely by palpation. The whole pelvis may be slipped forward or backward, or it may be twisted. Very commonly there is a tilting of the pelvis to one side or the other, one innominate may be slipped in any direction, and a very common dislocation I find is between the sacrum and last lumbar vertebra. In these displacements the sacral plexus is involved and the nerve and blood supply to the lower limbs is much interfered with. I have to my credit here the cure of a so-called case of locomotor ataxia which was nothing else than an interference with nerve conduction by a slipping of the whole pelvis posteriorly, making such pressure on the spinal and sacral cords that all symptoms of locomotor ataxia were present. This diagnosis had been made by several of the most eminent neurologists and I should have done the same if I had not possessed some knowledge of Osteopathy. Sciatica is also commonly caused in this way or from pressure within the pelvis from the pelvic organs, and much of the disease and disorder of the bowels, uterus, ovaries and bladder are all often due to pressure at some point or points about the pelvis. Of course you will remember the different causes of pressure, that made by the muscles especially.

Dr. Hazzard states that when the innominate bone is slipped forward you have a shortened leg and when displaced backward the leg is lengthened. He

quotes Dr. Harry Still as saying that "a twisted or tilted innominate may shorten a leg as much as three inches and may be mistaken for dislocation of the hip."

EXAMINATION OF THE HIP.

Because of the heavy muscles about it the hip has no landmarks for the Osteopath aside from those already given for the pelvis.

Dislocations or slippings are very common here. You may find the femur upward or backward, and in this case the leg is shortened and the toes turned inwards. Or it may be backward into or near the sciatic notch when the leg is shortened and toes turned in, but not so much. Third, you may find a thyroid dislocation into the obturator foramen. In this case the knee is bent and the toes are turned either inward and point down or outward, or the head of the femur may be forward against the pubic arch and the toes are turned out.

So in reality only the first two are difficult to diagnose as to position, especially if you are sure it is not a displacement of the pelvic bones. The pelvis and hip are especially difficult and only a thorough knowledge of the anatomy and a good experience in examining patients will make it possible for you to treat these cases.

LECTURE XX.

EXAMINATION OF THE LEGS AND FEET.

In examining the lower limbs and feet place the patient on a table in the dorsal position. See that he lies straight, then place your hands one on either ankle, and pull the limbs down, placing your thumbs on the internal malleolus, or so-called ankle bone, and if your thumbs come together evenly you feel pretty sure that the legs are of the same length; but, however, this is not reliable, for the pelvis may be tilted down or up on one side, which must be determined by placing the fingers on the anterior and posterior superior spines of the ilium, or, as I told you, by having the patient while lying flat on his back hold a tape measure between his front teeth and then stretch it down to first one anterior superior spinous process of the ilium, then the other, and so on with the knee and ankle, noting the difference if any by measurements.

It is a fact that you will find very few people perfectly symmetrical, so if the deviation is slight and there is no pain or discomfort which may be attributed to this it will be better to let it alone. If there is a real affection the affected side will be sore, especially the sacral articulations and the symphysis pubis if the trouble is in the hip or pelvis.

The knee is a very delicate joint because much exposed and a strain of the muscles attached to the bony prominence about the knee is very often found. You will have to diagnose between a sprain, syno-

vitis and rheumatism. If I find a knee swollen, red and painful I do not move the limb, but gently manipulate it from the sacrum posteriorly and from the iliac region anteriorly on down to the toes, to relax the tense and contracted muscles and free the blood supply. I gradually work about the knee and in the popliteal space for fifteen or twenty minutes, then order a hot compress of antiphlogistine to be changed every twelve hours until the third day, when I treat again. After the acute inflammatory condition subsides I begin to give gentle and limited motion, increasing this as the patient can bear it until the knee can be moved, when I favor a limited amount of use as soon as possible. You may have dislocation of the joint between the femur and the tibia, or the fibula and tibia alone may be displaced, but for some reason dislocations are not so commonly found here as the above-mentioned disorders.

At the ankle rheumatism and spasm is most often found, though this is a very favorite joint for dislocations and is treated in the same manner as given for the knee.

The foot is so often abnormal that it is difficult to give all the abnormalities, but the broken arch and consequent flat foot and bunions are most frequent. If you study the skeleton foot and the muscular attachments you will see how easy it is for all of these little blocks of bone to slip out of their natural positions and put the ligaments and muscles on a strain, thus causing pressure and pain. Talipes, or clubfoot, is an extreme of this condition and the Osteopath shines in treating all of these disorders of the legs and feet. Scarpa's triangle and

the popliteal space are locations in which you can reach much of the blood and nerve supply for the lower limbs, and it is here that much of the treatment is given for these parts.

LECTURE XXI.

THE PELVIC ORGANS.

The organs contained in the pelvis are the rectum and bladder, the uterus, ovaries, Fallopian tubes and vagina in the female and in the male the rectum, bladder and prostate gland. You must not expect the anatomy of these organs here. I merely wish to give you a method of examination and help you to become familiar with that which the examining hand or finger meets. If it is necessary to examine the rectum place the patient upon his left side in the Sims position, i. e., with the right limb drawn up across the abdomen. The anus or opening of the rectum is the external sphincter and presents a corrugated orifice.

Inspection will show the presence of any abnormal growth or condition. A protruding hemorrhoid will have the appearance of a small blue tumor, something like a grape (but not always as dark in color), and is very sensitive to the touch. You may also find the rectum prolapsed and protruding, but you can diagnose this condition from hemorrhoids by the fact that it is not tender and is pink, whereas the hemorrhoid, being an enlarged vein, is blue, and is painful. Then upon spreading the folds of the anus you may find small bleeding or raw-looking fissures or cuts, which are very painful upon defecation and cause a dull aching pain at the tip of the coccyx, or even up over the sacrum. Upon passing the finger into the normal empty rectum you will find a smooth elastic tube, upon passing the finger a little way

up and back you may easily feel the coccyx and follow up the course of the sacrum almost to the promontory. Of course you will know whether the coccyx is bent to an abnormal degree, as I have given you that quite fully with the spine. In front you may feel the uterus in the female and the prostate gland in the male, and this is an excellent point from which to treat these organs and to elevate the uterus. If the ovaries are prolapsed or slipped down behind the uterus you may find them as soft, round, elastic bodies, very sensitive to pressure. If the rectum contains fecal matter of course you may direct the patient to take an enema just before her or his next visit to your office in order that the rectum may be clear.

If there are internal hemorrhoids you will find them as you do the external by the presence of a small elastic tumor which is fairly sensitive to touch. If there are ulcers in the walls of the lower bowel you may feel them as flattened or depressed little areas and usually painful to the touch. You may even feel the opening from the sigmoid flexure by pressing the bowel down with the left hand on the abdomen. Of course if there is cancer or any other malignant disease of the rectum you will be aided in diagnosis by the characteristic systemic symptoms, i. e., the cachexia, emaciation, intense pain, etc. A stricture of the bowel at the sigmoid or anywhere below may be stretched by the finger, but must be done gently. Inasmuch as the nerve supply is so far reaching I will give you a resume of that after I have completed the consideration of the pelvic viscera.

LECTURE XXII.

EXAMINATION OF THE BLADDER, UTERUS AND OVARIES.

In making this examination I prefer the patient in the dorsal position, though many physicians use the Sims position. However, before making a digital examination you may learn a good deal that is of value by inspection of the external genitals. I shall not go into venereal or other diseases, which are only amenable to treatment through the general circulation and in my estimation by bathing and thorough medication, for be it understood that while I think Osteopathy the most excellent and successful therapeutic measure which the physician has I do not think it the only one, and having my medical education I sometimes, though not often, use the medicine which I see will assist my osteopathic treatment, and venereal diseases are among the few conditions which I believe will not yield to osteopathic treatment alone. I have no use for a bigot and the Osteopath who does not go on and complete his education by a thorough medical course is limited to a certain degree, and should be conscious of the fact and either turn the case over to an M. D. or invite one into the case with him or her; and so if you find a chancre or any suspicious eruption or condition of the external genitals and have not a medical education do not for your own sake undertake to treat the patient locally. Do what you can generally and send them to a specialist for treatment. However, aside from venereal disease, **inspection** will show whether there is any deformity

or abnormal development of the external genitals. In the male the most common, probably, is an elongated or adherent prepuce, or an occlusion of the external orifice. In the female you may find an elongated or adherent clitoris, or small painful growths about the urethra, which are neuroma. Or you may find cysts, of which, a cyst of the gland of Bartholin is most common and requires surgical measures.

Elephantiasis is an overgrowth of the labia of the vulva, or of the scrotal sac in the male. Sarcoma comes as a hard, painful nodule and may be taken for a bubo. Carcinoma also attacks the external genitals and can only be determined by the exclusion of the less malignant or benign growths. Lower down at the orifice of the vagina you notice the presence or absence of the hymen. If intact you find the membrane almost closed in; if not intact, it is stretched and ragged, and in a woman who has had children the thin tissue becomes lost in the folds of mucous membrane lining the labia. Occasionally you may find an impervious hymen, i. e., one without any opening, and in young girls at the age of puberty there may be an accumulation of fluids which have not been able to escape and cause much backache, pain in the limbs, and bearing down by their pressure.

Further down you come to the perineum, which is the pelvic floor and is the space between the orifice of the vagina and the anus or opening of the lower bowel. In childbearing women you may find this ruptured and if this condition exists it should be repaired by surgical means without delay, because it weakens the support of the internal organs and makes displacement most certain sooner or later.

LECTURE XXIII.

DIGITAL EXAMINATION OF THE FEMALE PELVIC ORGANS.

Digital examination of the female pelvic organs is made by passing either the index finger alone or both the index and middle fingers into the vagina with their dorsal surfaces backward.

The vagina is a membranous canal or collapsed tube extending in from the vulva to the uterus and lying between the urethra and bladder in front and the rectum behind. It is between five and six inches in length, the anterior wall being shorter than the posterior and extending from about the urethra or opening into the bladder backward and upward under the bladder, with which it is united, and then is reflected down a short distance onto the anterior lip of the cervix of the uterus, forming the anterior fornix or little pocket into which the examining fingers pass. In the same manner the posterior wall extends from the vaginal orifice upward and is reflected upon the cervix forming the posterior fornix. The posterior wall is curved, the curves varying with the position of the uterus and the amount of distention of the bladder and rectum.

In the center between these two walls and extending into the vagina the examining fingers meet the cervix or neck of the uterus, which will be felt as a small hard body with a depression, the os, or mouth, in the center; and should normally point backward and a little upward and lie well up in the vagina, about five or six inches from the opening.

The virgin cervix extends about $\frac{1}{4}$ - $\frac{1}{2}$ inch into the vagina and is about an inch in diameter. The os is a crosswise slit, with lips, the anterior lip being thicker than the posterior. You may feel whether the cervix points in the normal direction, whether too low, whether the cervix is enlarged, whether the os is smooth and regular or vice versa, and whether there is any discharge lodged in the os. You may also feel the broad ligaments on either side, whether there is any exudate which may be felt as a putty-like substance under the tissues, and if the ovaries are slipped down you may find them in the folds of the broad ligaments on either side of the uterus, or one or both may be behind the uterus. You will know them by the tenderness to touch and the presence of a small soft elastic body. The normal position of the ovary is so well up in the inguinal regions that it is difficult to find them, though bimanual pressure an inch and a half inward from the anterior superior spine of the ilia will produce tenderness; but do not persist in this simply for the sake of locating the ovary, because if this organ is much enlarged or there is a tumor or cyst you will cause pain with very little pressure. It is not well to poke about the pelvis too much. Don't do it unless there are grave symptoms of disease or disorder in these organs, or the patient's symptoms do not yield to treatment and you suspect reflex disturbance from this quarter. Hazzard says the treatment for the ovaries is given through the lumbar region from the second to the fifth—that is, vasomotors of both kinds go to the internal genital organs. The center for the blood supply for the ovaries is from the tenth to the twelfth dorsal, or between these. "The eleventh dorsal seems to be

the arterial center for control of the blood supply to the ovary."

The spermatic artery in the male and the ovarian in the female is opposite the second lumbar vertebra, above and back of the umbilicus and transverse colon, and you may by working in deeply follow this down to the ovary and, as Hazzard says, stimulate the arterial flow, while by working in the reverse direction you stimulate the venous flow. At the fifth lumbar you get the center for the hypogastric plexus, through which comes the pelvic plexuses. Now to continue with the digital and bimanual examination of the pelvic organs, while the examining fingers are inserted in the vagina and the left hand is placed gently over the lower part of the abdomen to push the uterus down a little you may feel the body through the vault of the vagina. The **uterus**, as you have learned from your anatomy, is normally a small flattened pear-shaped organ, consisting of a body and neck or cervix. The body is called the fundus and in the multiparous woman does not rise above the brim of the pelvis, hence cannot be felt in the hypogastrium. It is a hollow organ, possessing thick, muscular walls, and is lined with mucous membrane. When unimpregnated and normal it is about three inches in length, two inches wide at the top, and one inch thick. The fundus is directed forward and lies upon the bladder or against the bladder, hence lies in a slanting position with the top slightly down and forward, while the cervix is slightly upward and backward. The uterus is partially held in position by the broad ligaments, which are folds of peritoneum thrown over the body, and part way down on the cervix, then fold back, and are attached to either side of the

pelvis, dividing it transversely. In the folds of the broad ligaments besides the uterus are the Fallopian tubes, which run along the upper borders of the broad ligament from the ovary, which is also in its folds, to the upper corner of each side of the fundus, and open into the cavity of the uterus by very small orifices. And so, by pressing gently from above and exploring carefully with the finger inside, you may feel all the contents of the pelvis, and by knowing the normal condition learn the abnormal. As you pass your finger up the anterior wall of the vagina you will feel a soft cushion-like body, which is the bladder and is easily found unless perfectly empty. The uterus has in addition to the broad ligaments, two round—two utero-sacral and two utero-vesical ligaments—the latter two pairs being folds of peritoneum between the uterus and sacrum and the bladder and uterus, as their names indicate. The round ligaments are fibro-muscular cords from four to five inches in length, and pass from the upper corners of the body to the internal inguinal canal, and are lost in the tissues forming the mons veneris over the pubis. They probably help to prevent retroversion of the uterus when the bladder is greatly distended. The uterus being movable is retroverted or anteverted somewhat by the bladder as to whether it is full or empty. However, the uterus is not kept in its normal position by the ligaments alone, but more by the shape of the pelvis, the surrounding tissues, intestines and organs, and the floor of the pelvis or perineum. Probably the axis of the pelvis is the best support which the uterus has and yet it is most prone to malpositions. Indeed, in twelve years' medical practice (four of which was spent as resident physician and gynecologist to the Illinois

Eastern Hospital for Insane at Kankakee, where I had the most excellent advantages for observation, having made over eight hundred examinations and treatments in my last two years' service there) I have found a very small number of women with the uterus in its normal position. This can probably be accounted for in this way: The distended bladder naturally pushes the fundus of the uterus back. This brings it into the incline of the pelvis and some sudden jar or fall causes it to slip downwards past the promontory of the sacrum, and when it gets into the curve of the sacrum there is nothing to prevent the heavy fundus from tipping backwards (retroversion) or in slipping on down the incline, prolapsus. The uterine displacements are as follows:

1st. Anteversion, or forward displacement, when the fundus tips forward on the bladder and to a degree is physiological, but if extreme causes uncomfortable pressure upon the bladder, and also causes the cervix to tip too far back, making a condition of sterility.

2nd. Ante flexion, i. e., a bend in the anterior wall of the uterus at the junction of the body and cervix. Here you will find the cervix in its normal position, but the body is too far forward, and as is the case in all flexions the canal of the uterus is narrowed or occluded, making menstruation difficult.

3rd. Retroversion or backward displacement, where the fundus points back, and, if extreme, downward, and the cervix is forward and upward. This condition causes pressure upon the sacral nerve and the rectum, pulls on the broad ligaments, and the ovaries are usually dragged downward and may be backward.

4th. Retroflexion when the cervix points in the normal direction and the body is bent backward.

5th. Lateral version where the uterus is drawn to one side by adhesions or by a shortening of the broad ligament, in which case there will be tenderness and inflammation in the ovary and broad ligament of the opposite side because of the dragging strain upon them by the tightened condition of the other side.

6th. Latero-flexion, i. e., the body is bent to one side while the cervix may be in its normal position.

7th. Prolapsus or downward displacement, in which there are three degrees, namely, **lapse**, **prolapse** and **procidentia lapse**, where, as I have said, the uterus is pushed back by the bladder and slips down slightly; **prolapse**, where the organ falls down until it crowds the rectum and the cervix, and is at the opening of the vagina.

Procidentia, the condition in which the uterus protrudes outside of the vagina, and I have found a number of cases where absolutely the whole organ was outside of the body; and yet, except in these extreme conditions, I have been surprised at the amount of displacement present without any effect upon the health or comfort of the patient.

All of the flexions cause dysmenorrhea more or less because they obstruct the uterine canal and the versions, if extreme, by pressure, cause pain and distress at all times; but I have been surprised to find so many cases of uterine displacement, which apparently gave no discomfort whatever, and I have learned that if the circulation can be kept free and the bowels are well emptied, and not over-distended with gas the patient can bear a good deal of malposition of this organ without being conscious of it. I know that this

is adverse to the usual opinion of gynecologists, but I have long since concluded and find that many of the best physicians concur with me in the opinion that the local examination and treatment of the female organs of generation has been greatly overdone; so I avoid the use of the speculum and sound (especially the latter) except in an occasional case for diagnostic purposes. One of the most celebrated gynecological surgeons of this city told me only a short time ago that his speculum and uterine sound were locked up in the cupboard to stay there, for he thought, as I did, that the time of probing and poking about the pelvis and of packing it full of unyielding cotton two or three times per week had passed, and when I asked him what treatment he would give in place of the medicated tampon he replied "pelvic massage, and if I use medication it is by capsule or suppository"; and as Osteopaths you have a much more effective method of treating these disorders and diseases than massage. My manner of managing these cases is as follows: I make my diagnosis by inspection, palpation and an internal digital examination. Then I give a general treatment to stimulate the general circulation and to free the bowels, treating well in the lumbar and sacral regions, and in the hypogastric and inguinal regions. Placing the palms of my hands well down in a gentle manner in each inguinal region, I lift up on the deep structures and use vibration plentifully over all this region. Then I place one or two fingers in the vagina and the palm of the left hand on the outside and manipulate gently between them all the tissues and pelvic parts, at the same time working, always carefully and gently, against any abnormal position I may have found. If prolapsus or retro-

version or retroflexion is present, the patient is given the knee chest position, and I spread the vaginal walls, allowing the air to rush in and force the uterus up. It is far more effectual than to try to replace this organ by pushing or pulling it in the desired direction, either with the fingers or instrument. Of course it won't remain in position permanently at once and perhaps never will, but it would not if you packed the vagina full of cotton and you would only have a foreign body there to add to the crowding and pressure; but by frequently relieving the interference with the pelvic circulation, by stimulating the nerve life and thus strengthening muscular tissue and the ligaments you are helping the natural tendency to the normal and will gain much more, I assure you, than by any other method of treating these cases. I often find it necessary at first to give the patient a cathartic to free the bowel of a large fecal mass and deplete the blood vessels, but once or twice will suffice if the patient takes treatment regularly, for you can keep the bowels free after a few treatments, and in many cases it will be necessary to treat in the rectum, which is apt to be flabby and to show inertia.

I also instruct the patient to assume the knee chest position for ten minutes each night and morning, and if I find much engorgement of the uterine and pelvic blood vessels and the uterus large in consequence I use suppositories of glycerine with 10% ichthyol to keep up the depletion of the vessels, but of course without your medical degree you are not at liberty, I suppose, to use this measure and can still do much good work by treating the patient every day or four times per week, instead of three times as is my custom.

In anteversion and the other displacements the same means may be employed except the knee chest position, which would by force of gravity increase anteversion or flexion, but the vaginal walls may be spread in the dorsal position, allowing the entrance of air, as in the knee chest position.

And so in a superficial and somewhat limited way I have given you the osteopathic landmarks and most of the nerve centers.

Hazzard quotes from Howells' text-book as follows: He says, "Howells' text-book gives vasomotor fibers for the external genitals as follows: There are two groups, one coming from the lumbar region and the other from the sacral region—those of the lumbar region from the second, third, fourth and fifth lumbar nerves, running forward in the white rami communicantes. They pass through the pelvic plexus and pudic nerve, and thus reach their termination. The pudic nerve contains some vasomotor fibers for the external genitals. As for the sacral group, these leave the anterior roots of the nerves in the sacral region. A stimulation here causes dilatation of the vessels of the external genitals.

"Vasoconstrictors for the Fallopian tubes, uterus and vagina in the female and for the seminal vesicles and the vasa deferentia in the male are contained in the sacral nerves. Also some fibers from the second, third, fourth and fifth lumbar nerves. Hence the second, third, fourth and fifth lumbar are the same for the external and internal genitals. We get vasomotor fibers from both. We work upon the sacral region, springing the sacrum, relaxing the ligaments about it, and also stimulating the peripheral termination of the nerves in the muscles along the sacral region."

The fifth lumbar is the center for the hypogastric plexus and the second lumbar is the center for blood supply to the uterus, and the tenth and eleventh dorsal the blood supply to the ovaries. Hence these are given as special points for treatment of the internal and external genitals. Hazzard notes that in diseases of the genital organs the sympathetic filaments supplying these parts carry the irritation back to the spinal nerves and thus it may go down the sciatic or may influence the muscles at the lower part of the spine, causing lameness there. He also gives a case of Hilton's, a gentleman who came to be treated for supposed bladder and urethral trouble. The patient had much pain externally in the genitals of one side and he traced the pain along the peripheral branch of the pudic nerve, along the ramus of the pubis and ischium, to the external genitals. Hilton traced the nerve back and discovered at the tuberosity of the ischium on the side affected a thickening of the tissues which impinged upon the nerves, causing pain at the end filaments.

I had in my own practice a male patient who suddenly complained of urethral pain, frequent micturition, and indeed every symptom of an acute gonorrhœal affection. Not wishing to treat him myself, I sent him to a male medical friend, who, though the patient protested earnestly and vigorously to the contrary, said, except that he did not find the gonococcus present he still thought it an acute gonorrhœal infection and treated him accordingly for a month, in which time the symptoms increased and became so extreme that the only resource was an opiate. At this point I decided to have a male osteopathic physician treat him and with that end in view a graduate of Dr. Still's school, examined and treated

him osteopathically. He found nothing except a tense condition of the pelvic muscles and tissues, but the first treatment made an entire night's rest without an opiate possible and the second treatment relieved the whole condition completely. In both instances as soon as the doctor began treatment in the rectum the patient became comfortable. Evidently there was contracted muscles or other pressure within the pelvis which irritated the nerve supply of the urethra and the treatment relieved this as well as inhibited the nerves and the patient was relieved. It is useless to state that this patient is a devotee to Osteopathy. I give these little incidents as examples of what nerve pressure will do and of how closely the symptoms may simulate an infectious disease without the microscope to confirm the diagnosis.

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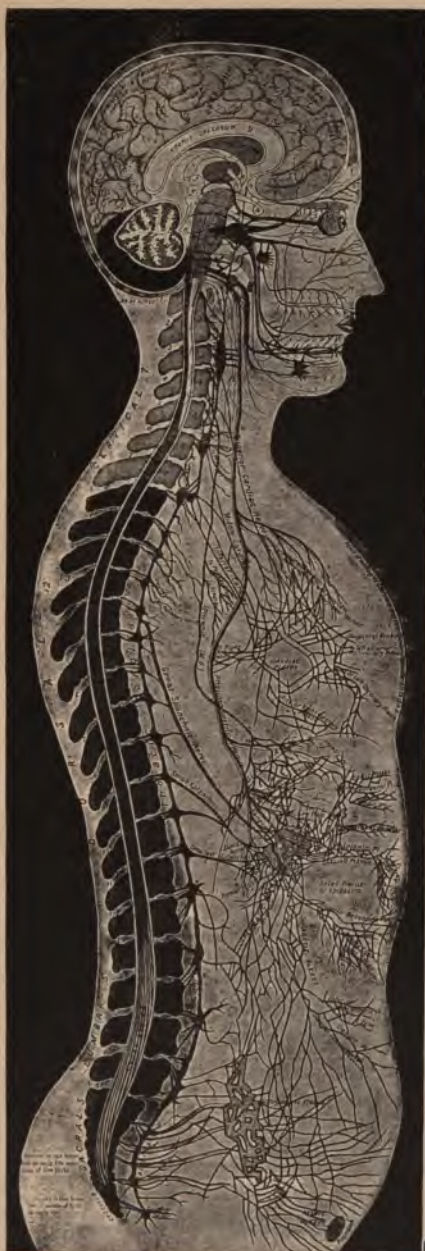
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